CONCORDIA UNIVERSITY

Graduate Studies News

Published by: *The Graduate Studies Office*

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Issue No. 2 – October 1986

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From the Dean's Desk

Good Research and Good Teaching – A Winning Combination

Several of our most eminent researchers were among the winners of the recent J.W. O'Brien Distinguished Teaching Award Competition held at Concordia. While this shows that the sets of good researchers and good teachers are not disjoint, it is generally acknowledged that neither set is a subset of the other. There are good researchers who are not good teachers and vice versa. At the graduate level where students usually prepare for a professional career, the model of the thesis supervisor as a researcher dominates the students' conception of the field in which they are working. Excellent graduate programs therefore, clearly require a pool of excellent researchers to inspire and guide promising students.

After a graduate student's research has been successfully completed, the process of presenting the obtained results to the academic community begins. In a recent survey on the relationship between Canada's university graduates and corporate employers entitled; Making the Match 1986, it is reported that a graduate's ability to communicate is one of the main ingredients of professional success. It is obvious that the preparation and the successful completion of a master's or doctoral thesis represents the scholastic framework for the systematic development and improvement of such skills. In addition to describing the achievements attained in the course of a research project, the writer must place the obtained results in perspective and explain their significance. The ability to take this extra step is usually the hallmark of a student who produces an outstanding thesis.

It is also important to reflect on the role of the thesis supervisor in this process. In order to encourage a university-wide discussion of the role of the thesis supervisor as researcher, I propose the establishment of an annual lecture on the connections between graduate teaching and research to be held in the spring of each year. What makes this exercise so exciting is the fact that the meaning of research varies so incredibly across the spectrum of our graduate programs. I therefore invite your suggestions on the procedures and the criteria for the selection of a suitable lecturer for this occasion. Please write to me at the above address and identify your correspondence as ''Annual Lecture on Teaching and Research''. Since it takes a great deal of effort and time to organize such an event, I suggest that your letters should reach the Graduate Studies Office by the middle of November. In my December column I will outline the precise format of the lecture. I envisage the lecture to be followed by a panel discussion involving distinguished guests and the academic community.

Program Profiles:

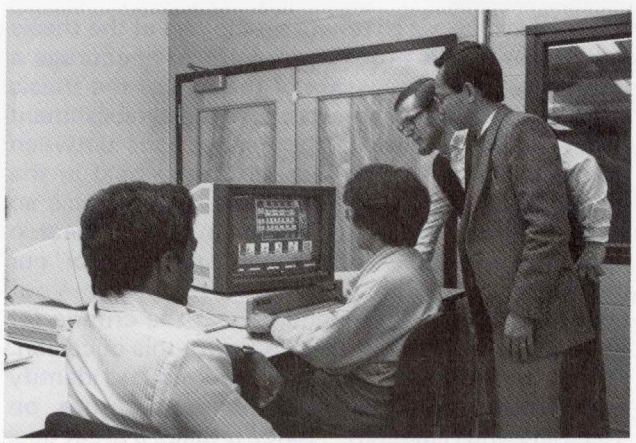
Graduate Studies in the Department of Computer Science

The Department of Computer Science offers several graduate programs. These include a Master of Computer Science degree, a Doctor of Philosophy degree and a graduate Diploma in Computer Science intended for those with undergraduate degrees in other fields.

Both the master's is and doctoral programs are available on a full or part-time basis, to students with a superior academic record in Computer Science or closely related disciplines. The Diploma program is open to qualified university graduates from diverse backgrounds who wish to obtain expertise in Computer Science fundamentals. Graduates of this program would be eligible to work in the computer science field, or for admission to the Master of Computer Science program, if they have a suitable academic standing.

In support of these programs the department has twenty-five full-time faculty and uses numerous part-time faculty. It currently has four adjunct professors and many visiting scholars. Some faculty work in industry which provides a good industry university link.

The department has extensive research and teaching facilities located on the ninth floor of the Hall Building. It also makes significant use of the university's central computing systems and the facilities of the Centre de Recherche d'Informatique de Montréal (CRIM).



Members of Computer Science Department in front of a SUN graphics station. Sitting in front of monitor; Lily Lam – Computer Analyst; standing behind her in foreground, Dr. T.D. Bui – Proffessor and acting Chairman; standing in background, Dr. D.K. Probst; sitting foreground, Dr. R. Jayakumar.

Research Activities and Grants

The department's research areas are many and varied. A full list is provided in the department's biennial reports, however a couple will be described here.

One area which has developed into a major strength with an international reputation, is the field of Pattern Analysis and Machine Intelligence and its applications. The work is under the leadership of Dr. C.Y. Suen, Dr. R. Shinghal and Dr. A. Kryzak and relates to the use of computers to recognize machine printed and handwritten characters and symbols. It includes preprocessing techniques to clean and smooth the raw images obtained from the optical scanner followed by a sophisticated expert system to extract the distinctive features from these characters.

This research goes much further than just the recognition of such characters. It leads into the use of image processing techniques and psychological experiments to study the legibility of characters printed in different fonts and styles in various situations. It includes analysis of words and their frequency distributions, spellings and positional counts, and the use of contextual and linguistic properties to process and understand texts and passages.

The applications of this research are numerous in the fields of data entry, e.g. text processing, automatic reading of printed and handwritten documents such as engineering drawings and maps, cheques, and mail. Indeed the principal researchers have been providing a valuable resource to government agencies and computer industries here and abroad. A fascinating side-line has been the whole study of the application of this technique to the pictographic symbols of the Far East which have, so far, proved a barrier to the use of computers in those cultures.

A second area of research is Very Large Scale Integration (VLSI). The main emphasis in this area is to design highly concurrent computing modules using the VLSI technology that has propelled digital system design in recent years. The scope of this research encompasses three areas: (1) general design methodology for preferred VLSI architectures, such as systolic arrays, (2) fault-tolerant algorithms and architectures that are aimed at VLSI implementations, and (3) silicon compilation, a process that automatically translates a design specified at the algorithmic level into VLSI layout.

This research will lead to results that will enable future digital system designers to derive, evaluate, and validate efficient complex designs before casting them into chips. The analogy between software engineering and VLSI design has enabled us to identify clear approaches in designing complex VLSI systems.

Because of the expertise required to cover the entire spectrum of VLSI design, faculty members and students with varied backgrounds have established a strong research group that shares experimental

facilities including some SUN work stations and other design stations obtained from several research grants and organizations.

The direct applications of this research span the entire spectrum of digital system design from signal processors to pattern recognition systems. The principal researchers focus on issues that are fundamental and unique in VLSI design and develop Computer Aided Design (CAD) tools that incorporate the practical realizations of these findings.

The above represent two major areas of research, however, other active areas include:

- Artificial Intelligence
- Numerical Computation
- Database Systems
- Distributed and Parallel Processing Systems
- Mathematical Computing
- Programming Languages and Computer Aided Software

In this research, considerable support has been generated from many sources including the National Science and Research Council (NSERC) and the Government of Quebec. Grants totaling over two million dollars have been received during the last three years. Indeed the percentage of grants received by the department is one of the highest in the country in this discipline.

The department has also received equipment grants and/or equipment worth over $300,000 this year from industry (Intel Corp. and Microelectronic Systems Corp. being major contributors).

Finally, through it's association with the Centre de Recherche d'Informatique de Montréal (CRIM), a consortium of four universities in Montreal, the Department of Computer Science is participating in many research groups. These groups, which involve researchers from all four Montreal area universities, receive sizable funding under the ''Action Structurant'' program of the Quebec government. Dr. J.W. Atwood and Dr. T. Radhakrishnan are among the principal investigators in the Computer Communications group which received $1,250,000 over the five-year period 1985-1990. Dr. H.F. Li and Dr. R. Jayakumar are two principal investigators in the VLSI group which received $1,318,000 over the same period. Finally, Dr. T.D. Bui is a principal investigator in the CAD/CAM group which received $1,056,000 over the five-year period from 1986-1991.

The Master of Fine Arts in Studio Arts

Master of Fine Arts (Studio Arts); Faculty, students, and staff

The Faculty of Fine Arts at Concordia University offers a M.F.A. in Studio Arts. This graduate program provides a stimulating environment where serious artists/students can practice, learn about, and conduct critical research into art.

The M.F.A. in Studio Arts concentrates its focus in the following studio areas:

Open Media – Associate Professor Irene Whittome
Painting – Professor Alfred Pinsky / Professor John Miller
Photography – Professor Tom Gibson
Printmaking – Professor Robert Bigelow
Sculpture/Ceramics/Fibre – Associate Professor Ric Gomez

* ''Open Media'' is a relatively new studio area in which a multi-disciplinary approach to art-making can be accommodated. This approach could include such disciplines as: video, film, bookworks, performance etc.

The M.F.A. Studio Arts Program provides studio seminars as a part of its curriculum. These seminars provide a framework for class discussion regarding a variety of technical and aesthetic concerns. Graduate students are expected to be self-motivated and committed to the practice of art. Access to studio facilities is available to M.F.A. students, twenty-four hours a day – seven days a week, in the first two years of residency. Students are expected to be well versed in historical and contemporary art issues and should be able to relate that knowledge to their own art activities, and articulate their understanding clearly.

A course entitled ''Visiting Artists Seminar'' taught by Martha Townsend brings over twenty nationally and internationally renowned artists to Concordia to speak about their work. Some names included in this year's guest list include: Marc Chiamovitz – London, England; Muriel Olesen and Gérald Minkoff – Geneva, Switzerland; Elsa Cayo – Peru and Paris; Betty Goodwin – Montreal. This as well as several other seminar courses offered by the M.F.A. Studio Arts program enhance the established reputation of the program. Other seminar classes offered are:

Topics in Contemporary Cinema
Avant-garde cinema in Canada and the U.S. since 1960

Video Art
(Renée Baert)
A survey of video art as it has evolved since the late 1960's

The Roots of Contemporary Art and The Languages of Current Practices
(Georges Bogardi)
A survey tracing the epistemology of Modern and Post-Modern art practices (present Manet)

Feminist Theory, Practice and Criticism in Contemporary Art
(Anne Ramsden)
A course examining a feminist approach to understanding contemporary art issues

Political Intention in Art: Disruption, Appropriation and Intervention
(Renée Baert)
An investigation of 20th century art activities which address political and social issues

Problems of Contemporary Art and Artists
(Lon Dubinsky)
A course which examines four issues which currently situate artists and their work:
1) role of institutional settings
2) art journals and magazines
3) influx of electronic media
4) policy

The M.F.A. in Studio Arts program encourages and maintains a close involvement in the Montreal Artistic Community. This is reflected in the number of graduate students invited to exhibit, and write reviews of current exhibitions for art magazines such as: **Parachute, Vie des Arts,** and **Vanguard.**

The M.F.A. Studio Arts program is housed in a converted stone and brick building located at 1230 Mountain Street (one block from the university's Visual Arts building).
Any inquiries regarding more specific information about the program should be addressed to:
Tom Gibson
Director, M.F.A. (Studio Arts)
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Concordia University
1230 Mountain Street
Montreal, Quebec
H3G 1Z2

Telephone: 848-4608

Reception held Sept. 18 to honour the former Dean of Graduate Studies (L) Professor Stanley G. French and (R) new Dean, Manfred E. Szabo, presentation made by; Lilyclaire Bellamy, G.S.A. President

Editor's Note:

In order to make **Graduate Studies News** a success, letters regarding the content of this issue and suggestions for future editions would be greatly appreciated.

Madelaine Palko

Credits:
typesetting: PARA Graphiques Ltée
printing: Concordia University Printing Services
photographs: p. 2 - Charles Bélanger
p. 3 - Brian M. McNeil
p. 4 - Brian M. McNeil